

FEDERAL UNIVERSITY OF TECHNOLOGY  
SCHOOL OF AGRICULTURE AND AGRICULTURAL TECHNOLOGY  
DEPARTMENT OF SOIL SCIENCE AND TECHNOLOGY  
2017/2018 HARMATTAN SEMESTER EXAMINATION

AGR 205. AGRICULTURAL CHEMISTRY

TIME: 3 HOURS:

Date: 26<sup>TH</sup> April 2018.

INSTRUCTION: ANSWER FIVE (5) QUESTIONS

1 (a) Define atomic number

(b) With the aid of a diagram, show the electronic configurations of the following elements.

(i) Fluorine (ii) Neon (iii) Sodium (iv) Magnesium

(c) State the modern periodic law.

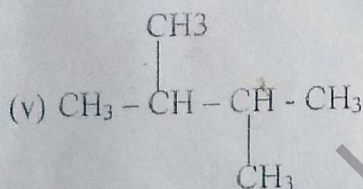
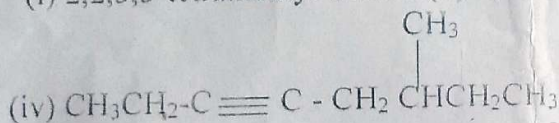
[ Atomic number of fluorine=9, Neon=10, Sodium=11, Magnesium=12].

2. (a) Explain briefly the following terms using requisite examples

(i) Hydrocarbon, (ii) Isomerism (iii) Functional group (iv) Alkyl group

(b) Write the structural formula and IUPAC names of the following compounds

(i) 2,2,3,3-tetramethyl butane (ii) 2,6-dimethyl 3-heptene (iii) 5-methyl-2-hexene

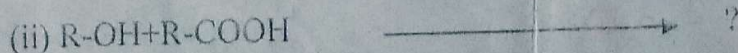
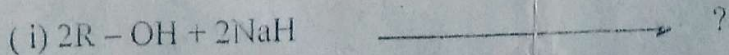


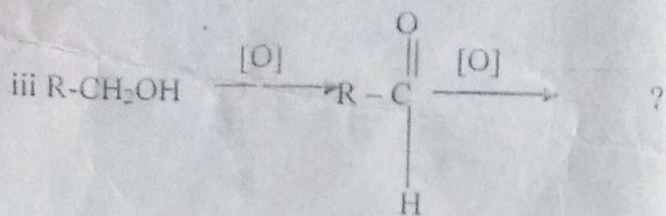
3(a) Briefly define the term "Bromination" of phenol" and give the end product of this reaction

(b) Enumerate five (5) important uses of Ketones

(c) Carefully describe the basic differences between an aldehyde and a ketone

4 (a) Complete the following equations and name the reactions involved





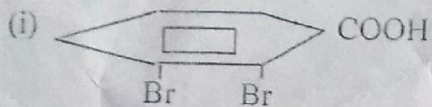
(b) Give the IUPAC names of the following compounds

(i)  $C_2H_4(OH)_2$ , (ii)  $C_3H_5(OH)_3$  (iii)  $C_{16}H_{33}OH$  (iv)  $C_7H_9(OH)_7$  (v)  $CH_3OH$

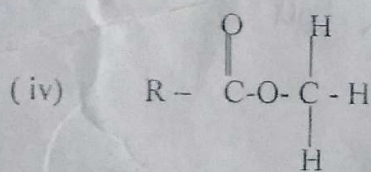
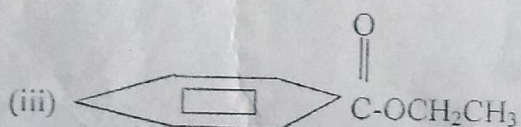
5 (a) Draw the functional group of the following

(i) Carboxylic acid (ii) Amides (iii) esters

(b) Give the IUPAC names of the following compounds



(ii)  $ClCH_2CH_2CH_2COOH$



6 (a) Differentiate between thermodynamics and kinetics in relation to reaction rate

(b) Explain Tyndall effects and dialysis as methods in determining colloidal system

(c) Identify the oxidizing and reducing agents in the equations below

